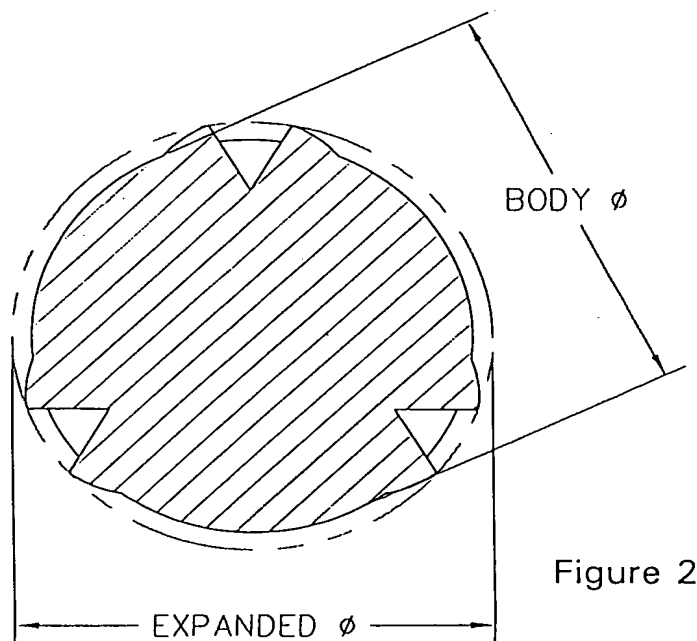
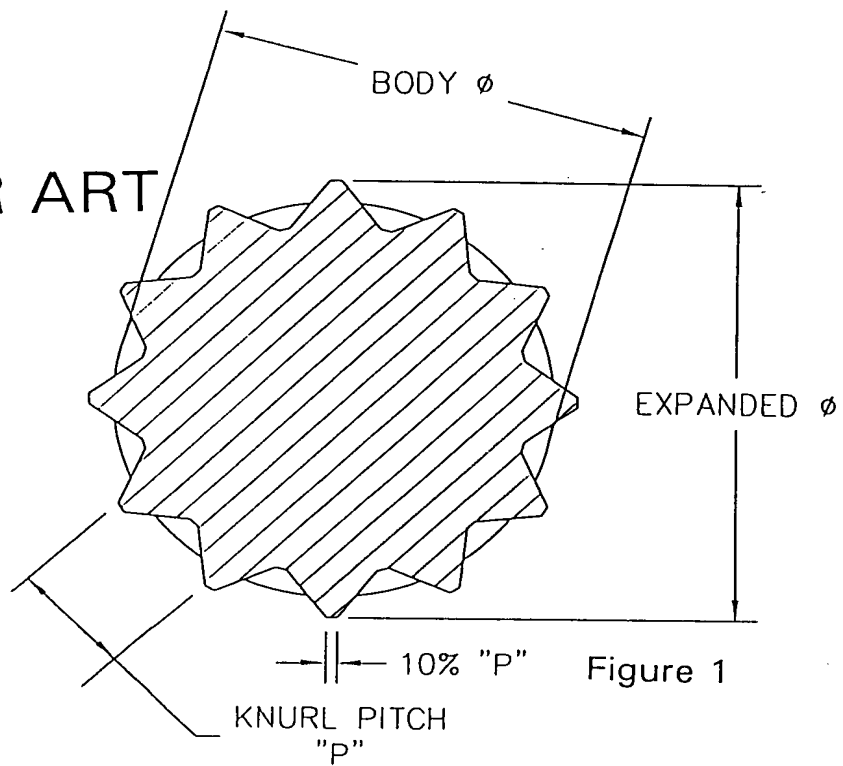


PRIOR ART



PRIOR ART

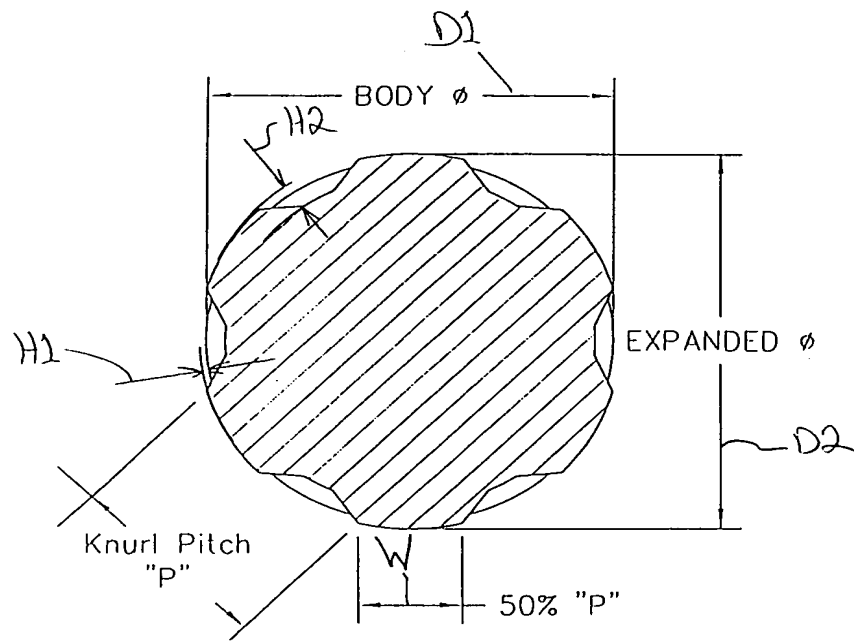


Figure 3

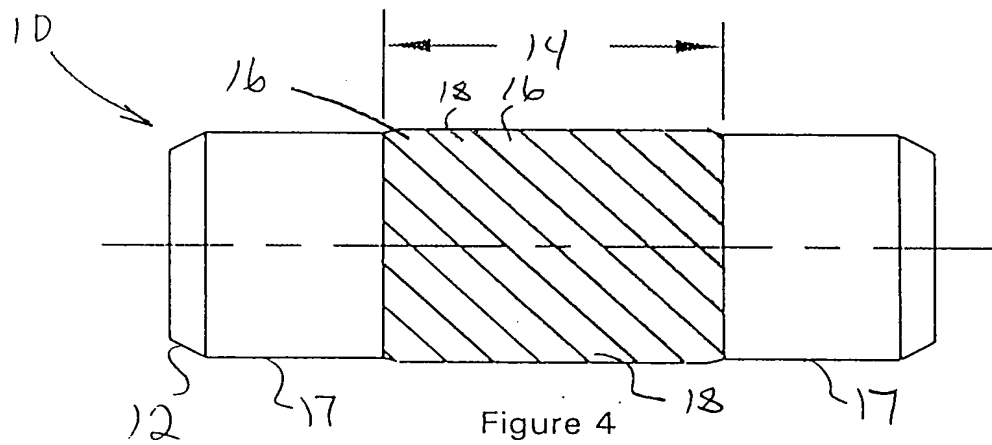


Figure 4

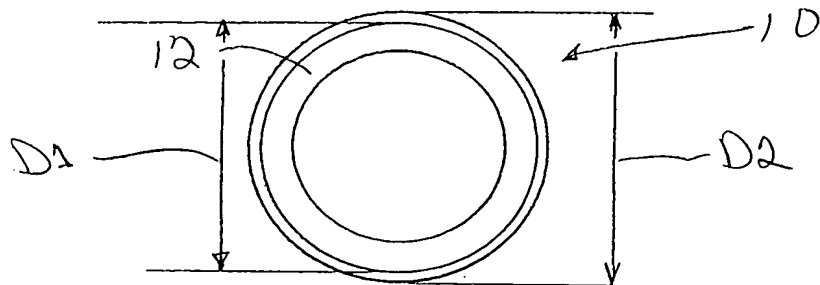


Figure 5

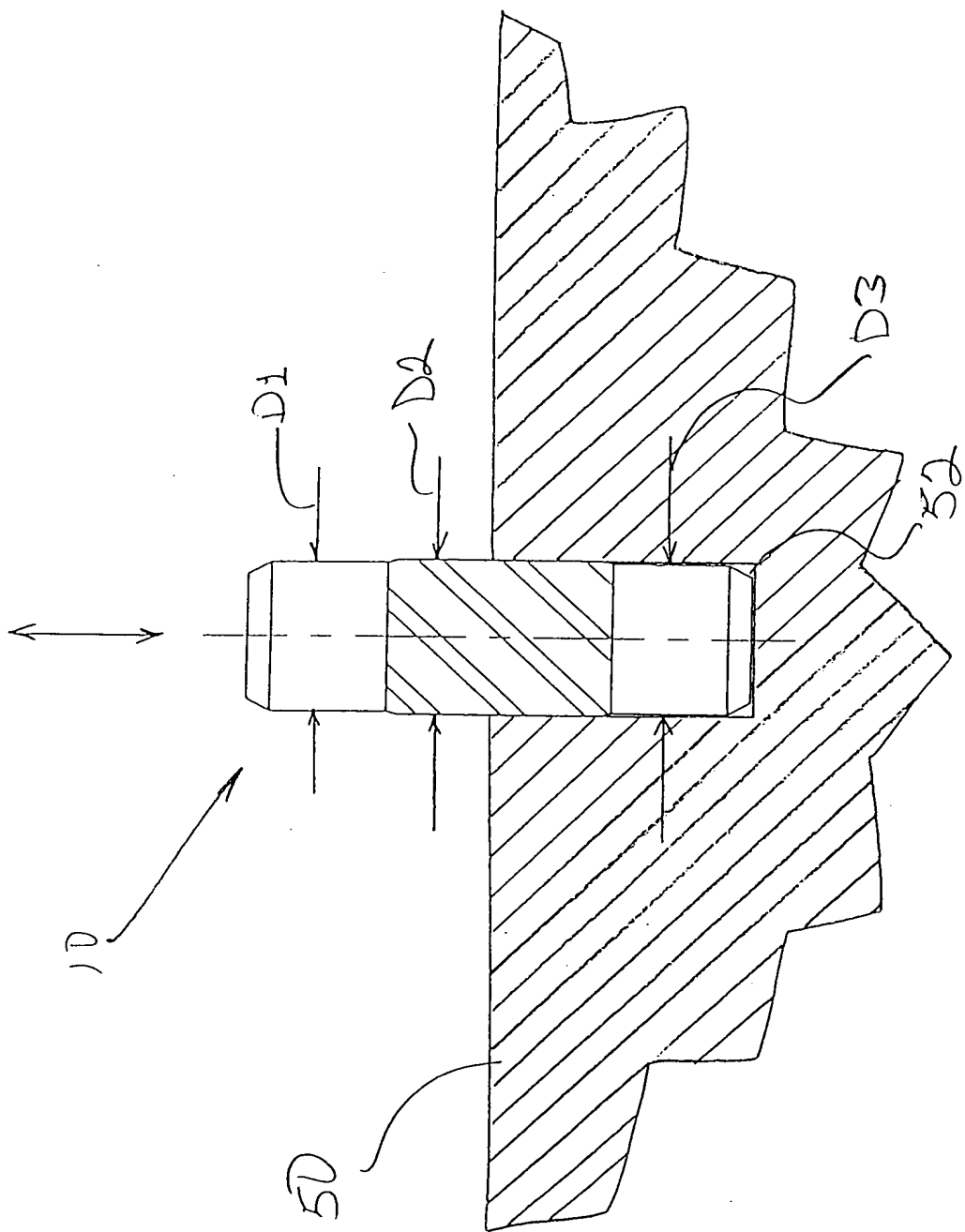
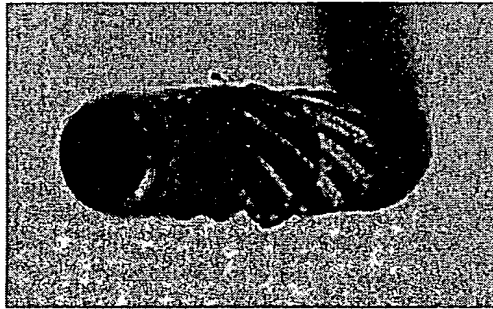


Figure 6

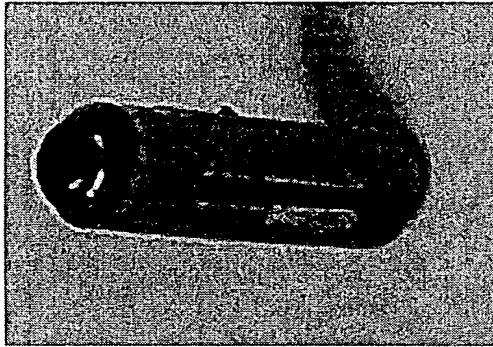
PRIOR ART



Prior Art Knurled

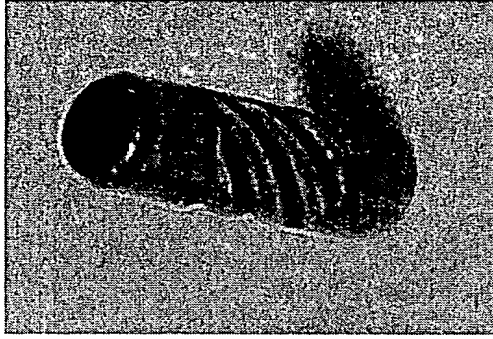
Figure 7

PRIOR ART



Prior Art Grooved Pin

Figure 8



Helical Grooved Pin

Figure 9

Nominal Diameter	Body Diameter "D1"		Hole Diameter		Expanded Diameter "D2"	
	Min	Max	Min	Max	Min	Max
1/16	0.0605	0.0625	0.0635	0.0645	0.0655	0.0675
3/32	0.0918	0.0938	0.0948	0.0958	0.0988	0.0988
1/8	0.1230	0.1250	0.1260	0.1270	0.1280	0.1300
5/32	0.1543	0.1563	0.1573	0.1583	0.1593	0.1613
3/16	0.1855	0.1875	0.1885	0.1895	0.1905	0.1925
1/4	0.2480	0.2500	0.2510	0.2520	0.2530	0.2550

Table 2

Formula

D1 Max = Nominal Diameter
 D1 Min = Nominal Diameter - .002"
 Hole Min = D1 Max + .001"
 Hole Max = D1 Max + .002"
 D2 Min = Hole Max + .001"
 D2 Max = Hole Max + .003"

D2/D1		D2/Hole Dia.	
Min	Max	Min	Max
105%	112%	102%	106%
103%	108%	101%	104%
102%	106%	101%	103%
102%	105%	101%	103%
102%	104%	101%	102%
101%	103%	100.4%	102%

Nominal Diameter	Body Diameter "D1"		Hole Diameter		Expanded Diameter "D2"	
	Min	Max	Min	Max	Min	Max
1.5	1.45	1.5	1.52	1.55	1.57	1.62
2	1.95	2.0	2.02	2.05	2.07	2.12
2.5	2.45	2.5	2.52	2.55	2.57	2.62
3	2.95	3.0	3.02	3.05	3.07	3.12
4	3.95	4.0	4.02	4.05	4.07	4.12
5	4.95	5.0	5.02	5.05	5.07	5.12
6	5.95	6.0	6.02	6.05	6.07	6.12

Formula

D1 Max = Nominal Diameter
 D1 Min = Nominal Diameter - 0.05mm
 Hole Min = D1 Max + 0.02mm
 Hole Max = D1 Max + 0.05mm
 D2 Min = Hole Max + 0.02mm
 D2 Max = Hole Max + 0.07mm

Table 3

D2/D1		D2/Hole Dia.	
Min	Max	Min	Max
105%	112%	101%	107%
104%	109%	101%	105%
103%	107%	101%	104%
102%	106%	101%	103%
102%	104%	100.5%	102%
101%	103%	100.4%	102%
101%	103%	100.3%	102%